

ATOMIC ENERGY *newsletter*®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

Dear Sir:

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Public offering of 180,000 shares of common stock is proposed by Baird-Atomic, Inc., Cambridge, Mass. The company has asked SEC registration of the shares (\$1 par value) which will be offered publicly through a group headed by White, Weld & Co., 20 Broad St., New York. Of the proceeds, the company will use \$1.1 million to repay in full short-term indebtedness, and if business conditions warrant, \$1 million to buy or construct new plant facilities. (Baird-Atomic designs and manufactures atomic-electronic instruments and optical equipment, and does contract research and engineering, principally for the government. Established in 1936, as Baird Associates, it merged in 1956 with Atomic Instrument Co.) (Other FINANCIAL NEWS, p.5 this LETTER.)

Order for a high-current, 3 million electron-volt Van de Graaff particle accelerator has been received by High Voltage Engineering Corp., Burlington, Mass., from Westfälischen Technischen Hochschule, Aachen, Germany. High Voltage will build the machine in the U.S., and make delivery this Summer. It provides an intense controlled beam of positive ions, and may be used to explore radiation damage effects (in metals and other solids) from intense neutron fluxes at very low temperatures. (Other MANUFACTURERS' SALES, p.3 this LETTER.)

The nuclear reactor at Halden, Norway, to be used for what is believed to be the first nuclear process steam installation, went into operation last week. Designed by the Netherlands-Norwegian Joint Establishment for Nuclear Energy Research, Kjeller, it is of the boiling heavy water type, fueled with natural uranium. Its main function will be for studying problems associated with such boiling heavy water reactor systems, although it will produce some 15 tons per hour of process steam in the secondary light water circuit. The paper and pulp factory Saugbrugsforeningen, close by the reactor installation, will use this process steam. Total cost of the plant, including heavy water and first uranium fuel load, was \$3.5 million. Built by Norwegian Institutt for Atomenergi, with concerns in Norway as sub-contractors, heavy water came from the USAEC and fuel from the U.K. Atomic Energy Authority. (This Halden reactor project is an undertaking of O.E.E.C., EURATOM, and other European countries, with joint program, budget and staff provided by the participants.) (Other NEWS OUTSIDE THE U.S., p.4 this LETTER.)

Contracts totaling \$99,867,000 were awarded by the U.S. Navy last week for construction of the hulls of the last three of the nine nuclear powered submarines capable of firing the Polaris missile. Newport News Shipbuilding and Drydock Co., Newport News, Va., received two of the contracts; third went to Electric Boat division of General Dynamics Corp., Groton, Conn. Newport News contract was for \$63,726,000; Electric Boat contract was for \$36,141,000. (Contract did not cover materials to be supplied by others, such as the reactors, etc. Including such items, cost of each craft will be about \$100,000,000.) (Other CONTRACT NEWS, p.2 this LETTER.)

ATOMIC ENERGY CONTRACT NEWS...

CONTRACTS AWARDED: Contracts totaling approximately \$4,300,000 have been awarded by the USAEC to two firms for work on its nuclear superheat development program. One contract, with Combustion Engineering-General Nuclear Engineering Corp., Windsor, Conn., covers integral boiling superheated reactors. A portion of this work is applicable to the reactor concept now under study by CE-GNEC under a subcontract with the Puerto Rico Water Resources Authority. If the concept is proved feasible, the USAEC will go ahead with final design and construction of a prototype plant...The second contract, with General Electric Co., San Jose, Calif., concerns mainly separate superheaters. Much of the work under this contract will be of value in the development of integral superheaters, as well as separate superheaters. (The two firms were among nine which submitted proposals in response to the USAEC's March, 1959, invitation to do engineering development work on concepts and materials suitable for power reactors of advanced design capable of using superheated steam.)

CONTRACT TERMINATED: Research and development contract received by Nuclear Development Corp. of America, from the USAEC, under which it was doing work on liquid sodium-cooled heavy water-moderated nuclear power reactors, has not been renewed. Nuclear Development started work in April, 1957, on this concept in connection with the proposal of the Chugach Electric Association, of Anchorage, Alaska, for construction of a 10,000 kw nuclear power station at Anchorage. The USAEC felt that in view of the current doubt as to the technical feasibility of the concept, research and development should be suspended for an indefinite period.

CONTRACTS EXTENDED: Three months extension of contract of General Atomic division of General Dynamics Corp., for work under Project Orion, has been approved by the Advanced Research Projects Agency. The work calls for \$300,000 additional expenditure by ARPA on Orion. This is a feasibility study, conceived by staff of General Atomic, and started in July, 1958, at GA's San Diego, Calif., laboratory. It covers a space platform, propelled by controlled nuclear detonations. This most recent extension provides for further theoretical studies on the subject.

ATOMIC ENERGY BUSINESS NEWS...

NEW FIRM ESTABLISHED IN NUCLEAR FIELD: Radiation Engineered Services, new firm recently set up in Norristown, Pa., is now offering a series of training programs in the nuclear field. The programs are designed to assist in obtaining USAEC licenses for the possession of radioisotopes, and to provide generally a source of information. Full details may be obtained from the company's headquarters, at Lafayette & Water Sts., in Norristown.

NEW FACILITIES BEING SET UP: West Coast division has been established by Nuclear Consultants, Inc., of St. Louis, Mo. Located at 1717 So. Victory Blvd., Glendale, Calif., it is believed better service may be rendered western customers of the concern, which specializes in supplying radioisotopes for the medical profession.

Nuclear Materials & Equipment Corp., Apollo, Pa., has received tentative approval of a loan from the Pennsylvania Industrial Development Authority for construction of a nuclear research laboratory in North Vandergrift, Pa. Nuclear Materials will have a staff of 65 in the new laboratory, which will be able to handle all types of radioactive materials including plutonium.

JOINT PRIVATE RESEARCH PROGRAM UNDERWAY: First large scale investigation of radiation effects on steels in a private reactor, wholly financed by private organizations, is a new joint program of United States Steel Corp., and General Electric Co. USS is furnishing the steels, and GE's San Jose, Calif., facilities, which include its test reactor there, will be used in the experimental work. USS objectives are to develop improved steels for nuclear reactor uses. One phase of the program covers corrosion and radiation resistance under conditions simulating boiling-water reactor service. In another phase of the program, effects of high-intensity neutron irradiation on properties of reactor pressure-vessel steels will be studied.

PLANT EXPANSION COMPLETED: United States Radium Corp., Morristown, N.J., has recently completed a new addition at its Bloomsburg, Pa., plant where it manufactures watch dials and related products. Production capacity has been doubled, according to C. W. Wallhausen, vice president. U.S. Radium is a pioneer organization in design and fabrication of radioisotope sources and associated products, as well as x-ray screens for industrial and medical usage.

NEW PRODUCTS, PROCESSES, INSTRUMENTS...for nuclear lab & plant...

NEW PRODUCTS FROM MANUFACTURERS: Two new pulse height analyzers, of all new circuitry, use a linear amplifier that is said to have such good overload characteristics that it eliminates double pulsing or threshold shift. Model SC-76 contains a linear amplifier, pulse height analyzer and high voltage regulator. Model SC-77 provides in addition a 2000-volt power supply.--Tracerlab, Inc., Waltham 54, Mass.

PRODUCT NEWS: First commercially available Beta-Alanine-2-C-14 is now being offered by the manufacturer, Research Specialties Co., Richmond, Calif. The company offers it in chromatographically pure form.

Two new materials for protection against radiation are offered by their English manufacturers. Available from Cuthbert Andrews, Bushey, Hertfordshire, the distributors, is a flexible lead body shielding. This consists of a series of lead scales, each sealed in a flexible plastic envelope, and overlapping the immediately adjacent unit. The design is said to enable the sheet to be bent, folded, and shaped to body contours. It may also be cleaned or sterilized by autoclaving. Thickness of the lead scale is usually 0.25 mm., but because of the overlap design, some 80% of the area is covered by two or more scales...Produced by Unibrix Radiation Shieldings Ltd., 147 Victoria St., London S.W.1, is a recently developed material for temporary or permanent structures providing protection against radiation. The material is supplied in chevron-type and interlocking units. Nine shapes are said to make it possible to erect structures of almost any shape with unskilled labor. Regular Unibrix have a specific gravity of 3.4 with one cu ft. weighing 215-lb. Unibrix I.R. have sp. gr. of 4.4 and one cu. ft. weights 272-lb.

Two new instruments for nuclear work are being produced by firms in the U.K. A manipulator for radioactive materials, known as Emefco type T5, for remote handling of radioisotopes in the open, has been introduced by Nuclear Research Applications Ltd., Emefco House, Bell St., Reigate. The remotely operated head, rotating through 370-deg., has a handgrip with a holdfast clamp. Its shaft is a machined and polished tube for which a special split sphere has been designed so that it can be used through a lead wall...Beta-gamma survey meter, Ekco type N596, being manufactured by Ekco Electronics Ltd., Ekco Works, Southend-on-Sea, provides ranges of 0-3, 0-30, and 0-300 millirads/hour, together with an integration facility up to 30 millirads.

REACTOR & RADIATION DEVICE NEWS: Construction of a 12.5 billion electron-volt particle accelerator began last week at Argonne National Laboratory, Lemont, Ill. The \$29 million machine, known as the Zero Gradient Synchrotron (ZGS) will be housed in a ring-shaped building 200-ft. in diameter, containing a magnet arranged in eight sections around the outside of the circle. Research at the facility will be carried on, in part, by the Argonne accelerator user's group, a cooperative organization of physicists and universities in the Midwest headed by E. L. Goldwasser, University of Ill.

Operations have started at the new Westinghouse testing reactor at Waltz Mill, Pa., primary purpose of which is to subject material and nuclear fuels to radiation conditions similar to those encountered in an operating power reactor. Initial operation of the reactor will be at a power level of 20,000 kw of heat, but the plant has been engineered to permit operation at any level up to 60,000 kw with some additional equipment and minor building changes. The reactor uses highly enriched uranium as power source, and water as moderator and coolant.

A water cooled and moderated pool-type nuclear reactor, with associated laboratories, planned for the Pullman, Washington campus of the State College of Washington, will be furnished in large part by General Electric Co.'s atomic equipment department, San Jose, Calif. The college has contracted with GE for design and construction of the facility, which will be similar to the Bulk Shield Reactor in operation for several years at Oak Ridge National Laboratory, Tenn. The college has budgeted \$609,000 for the reactor, \$500,000 of which was received as a grant from the National Science Foundation.

Research reactor to be furnished Chulalongkorn University, Bangkok, Thailand, by Curtiss-Wright Corp., will have \$350,000 of its cost defrayed by the U.S. under letter of commitment recently issued Thailand. The reactor will be a 1 mw movable core, heterogeneous swimming pool research reactor. It will use plate-type fuel elements containing 20%-enriched uranium. Initial fuel loading will be approximately 4.75 kg of uranium-235.

- 4 -

ATOMIC ENERGY PATENT DIGEST...

PATENTS ISSUED June 23, 1959 to PRIVATE ORGANIZATIONS: (1) Sealed radio-activity sample chamber. William H. Carter, Jr., inventor No. 2,892,086 issued to inventor of record.

PATENTS ISSUED June 23, 1959 to GOVERNMENTAL ORGANIZATIONS: (1) Production of curium-245. E. K. Hulet, S. G. Thompson, inventors. No. 2,891,859 assigned to USAEC. (2) Method of processing nuclear reactor fuel elements. M. H. Curtis, inventor. No. 2,891,840 assigned to USAEC. (3) Recovery of plutonium values from dilute solution by partial precipitation of carrier compounds. D. M. Ritter, inventor. No. 2,891,841 assigned to USAEC. (4) Linear amplifier. E. Fairstein, inventor. No. 2,892,044 assigned to USAEC. (5) Continuous alpha air monitor. D. R. Sawle, inventor. No. 2,892,091 assigned to USAEC. (6) Continuous plasma generator. W. D. Kilpatrick, inventor. No. 2,892,114 assigned to USAEC.

PATENTS ISSUED June 30, 1959 to PRIVATE ORGANIZATIONS: (1) Method and apparatus for more efficient use of high-energy charged particles in the treatment of has-phase systems. D. R. Dewey, II, A. J. Gale, inventors. No. 2,892,946 assigned to High Voltage Engineering Corp., Cambridge, Mass. (2) X-ray generator mount. R. M. Emanuelson, inventor. No. 2,892,947 assigned to High Voltage Engineering Corp., Cambridge, Mass.

PATENTS ISSUED June 30, 1959 to GOVERNMENTAL ORGANIZATIONS: (1) Internal cutting device. W. H. Russell, Jr., inventor. No. 2,892,387 assigned to USAEC. (2) Improved process of plutonium carrier precipitation. B. F. Faris, inventor. No. 2,892,676 assigned to USAEC. (3) Separation of uranium from thorium and protactinium. W. K. R. Musgrave, inventor. No. 2,892,677 assigned to USAEC. (4) Method of maintaining plutonium in a higher state of oxidation during processing. S. G. Thompson, D. R. Miller, inventors. No. 2,892,678 assigned to USAEC. (5) Ion-exchange method for separating radium from radium-barium mixtures. M. E. Fuentevilla, inventor. No. 2,892,679 assigned to USAEC. (6) Recovery of cesium from waste solutions. W. H. Burgus, inventor. No. 2,892,680 assigned to USAEC. (7) Separation process for zirconium and its compounds. W. H. Crandall, J. R. Thomas, inventors. No. 2,892,681 assigned to USAEC. (8) Pyrochemical decontamination method for reactor fuel. A. G. Buyers, inventor. No. 2,892,701 assigned to USAEC. (9) Neutron density control in a nuclear reactor. G. J. Young, inventor. No. 2,892,765 assigned to USAEC. (10) Recovery of uranium by cycloalkyldithiocarbamate complexing. O. K. Neville, inventor. No. 2,892,855 assigned to USAEC.

PATENT NEWS: Some 90 patented inventions, developed in the course of nuclear research sponsored by the USAEC, have now been made available on a royalty-free licensing basis (non-exclusive) by the USAEC. These inventions, previously described in this LETTER, were issued in the period from Sept. 30, 1958 to Feb. 3, 1959. They bring to 1,861 the number of such Commission-held patents released for industrial use; full details may be obtained from the USAEC's patent branch, Washington 25, D.C.

NEWS OUTSIDE THE UNITED STATES...

NEW NUCLEAR POWER STATIONS: Fifth nuclear power station in the U.K., which is to be constructed in Wales at Trawsfynydd, Merionethshire, will be work of Atomic Power Constructions, under contracts of the Central Electricity Generating Board. To cost about £65 million, it will have a total electrical capacity of 550 megawatts. It will have two improved Calder Hall-type gas cooled, graphite moderated reactors using natural uranium. Atomic Power Constructions is the fifth U.K. group to obtain a reactor power station contract. Member companies are Crompton Parkinson; Fairey Aviation; International Combustion (Holdings); and Richardsons Westgarth & Co., in association with Nuclear Civil Constructors. Now under construction in the U.K. are four nuclear power stations: Berkeley, Gloucestershire (275 megawatts); Bradwell, Essex (300 megawatts); Hinckley Point, Somerset (500 megawatts); and Hunterston, Ayrshire (320 megawatts).

Final design of a 200,000 kw nuclear power plant and work on plans for early construction, will be started immediately by Atomic Energy of Canada, Ltd., Gordon Churchill, minister of trade and commerce told the House of Commons last fortnight in Toronto. Cost is estimated at about \$60 million, exclusive of design and development charges. To be known as CANDU (Canadium, deuterium, uranium), the station will use a natural uranium heavy water system. It will be similar in general principles of operation to the (Nuclear Power Demonstration) power station now under construction near Rolphton, Ontario, as a joint project of Ontario Hydro, Canadian General Electric Co. Ltd., and A.E.C.L.

ATOMIC ENERGY FINANCIAL NEWS...

FINANCING APPROVED: Balance of current financing program of Yankee Atomic Electric Co., Boston, Mass., has been approved by the SEC. This consists of \$20 million principal amount of 5% first mortgage bonds due 1982 and \$17 million of 4-3/4% unsecured serial notes. Bonds are to be sold to Equitable Life Assurance Society of the U.S., and to nine other institutional investors, and the notes are to be sold to the First National Bank of Boston. (Previously the SEC had authorized Yankee Atomic to issue and sell to New England Power Co., and ten other stockholder companies an additional \$7 million of common stock.)

INCREASED NUCLEAR BUSINESS SHOWN: Annual report of United Shoe Machinery Co., Boston, indicates that the firm's billings for the year covered totaled \$2.5 million. It also reported a backlog of some \$4.5 million in nuclear business.

DEBENTURE MEETING ADJOURNED: Meeting last fortnight of debenture holders of Lorado Uranium Mines, Canadian mining and milling company, has been rescheduled for July 21. H. H. Wright, Lorado's managing director, noted that the financial success of Lorado is dependent on a substantial increase in tonnage of ores supplied by other mines in the Beaverlodge area. He said the firm can meet its financial obligations, other than sinking fund, at about 400 tons per day milled. It expects to get 125 tons per day from its own property next month, and is now getting 100 tons per day from Eldorado Mining & Refining.

NEW STOCK ON MARKET: The 175,000 share offering of Aerojet-General Corp.'s common stock is now on the market at \$75 a share, with Kidder, Peabody & Co., heading the groups marketing the stock. Proceeds of the offering will be used to pay back \$19 million in advances made by General Tire & Rubber Co. General Tire owns 3,771,672 of Aerojet's 4,491,667 outstanding common shares. Aerojet-General, with facilities at four locations in California, and one in Maryland, makes nuclear research reactors at its Azusa, Calif., plant.

NEW BOOKS & OTHER PUBLICATIONS...

Radiation Preservation of Food. U. S. Army Quartermaster Corps. Issued by the QM after four years of work on use of ionizing radiation for food preservation. 475 pages. No. PB-151493. (\$5.00)...Nuclear Radiation Effects on Ferromagnetic Core Materials. Work done at Naval Ordnance Laboratory, White Oak, Md. 72 pages. No. PB-131014. (\$2.00). --Office of Technical Services, Washington 25, D.C.

Radiography of Aluminum using Iridium-192. Investigations at Philadelphia Naval Shipyard, Pa. 19 pages. No. PB-158007. (Microfilm, \$2.40; Photostat, \$3.50)...Effect of Neutron Irradiation on Shear Stress of Metal Single Crystal. Work done at Convair div. of General Dynamics Corp., Fort Worth, Tex. 62 pages. No. PB-139023. (Microfilm, \$3.90; Photostat, \$10.80).--Library of Congress, Washington 25, D.C.

MANUFACTURERS' LITERATURE: Bio-Assays for Hazard Control is new 8-page brochure issued by Controls for Radiation, Inc., 130 Alewife Pkway., Cambridge 40, Mass. The company is expanding its bio-assay services, and the booklet describes criteria used in such programs, etc...New carbon-14 labeled compounds, and complete new schedule of reduced prices now in effect on all its carbon-14 labeled compounds are covered by Atomlight, July, 1959, issued by New England Nuclear Corp., Cambridge, Mass... How to Evaluate an Analytical Method with Radioisotopes is fifth in a series of technical bulletins being issued by Nuclear-Chicago Corp., 229 W. Erie St., Chicago, Ill. The bulletin describes uses of radioactivity in helping the chemist prove a new method of analysis or extend an established method to a new type of unknown mixture... Information on this firm's commercially available multi-channel analyzers, including its new model 34-9, 400 channel analyzers, is in a recent comparison sheet titled Lets Analyze the Situation issued by Radiation Instrument Development Laboratory, Inc., 5737 So. Halstead St., Chicago 21, Ill.

NOTES: Power Reactor Technology, Vol 2, No. 3, dated June 1959, is most recent issue of this quarterly review of progress in this field. The issue is the work of staff of General Nuclear Engineering Corp.; it is published by the USAEC.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

July 7, 1959